

La gent gran i les TIC
Barcelona, 22 d'Abril 2013

Les TIC per a la salut integral i la vida
activa i independent

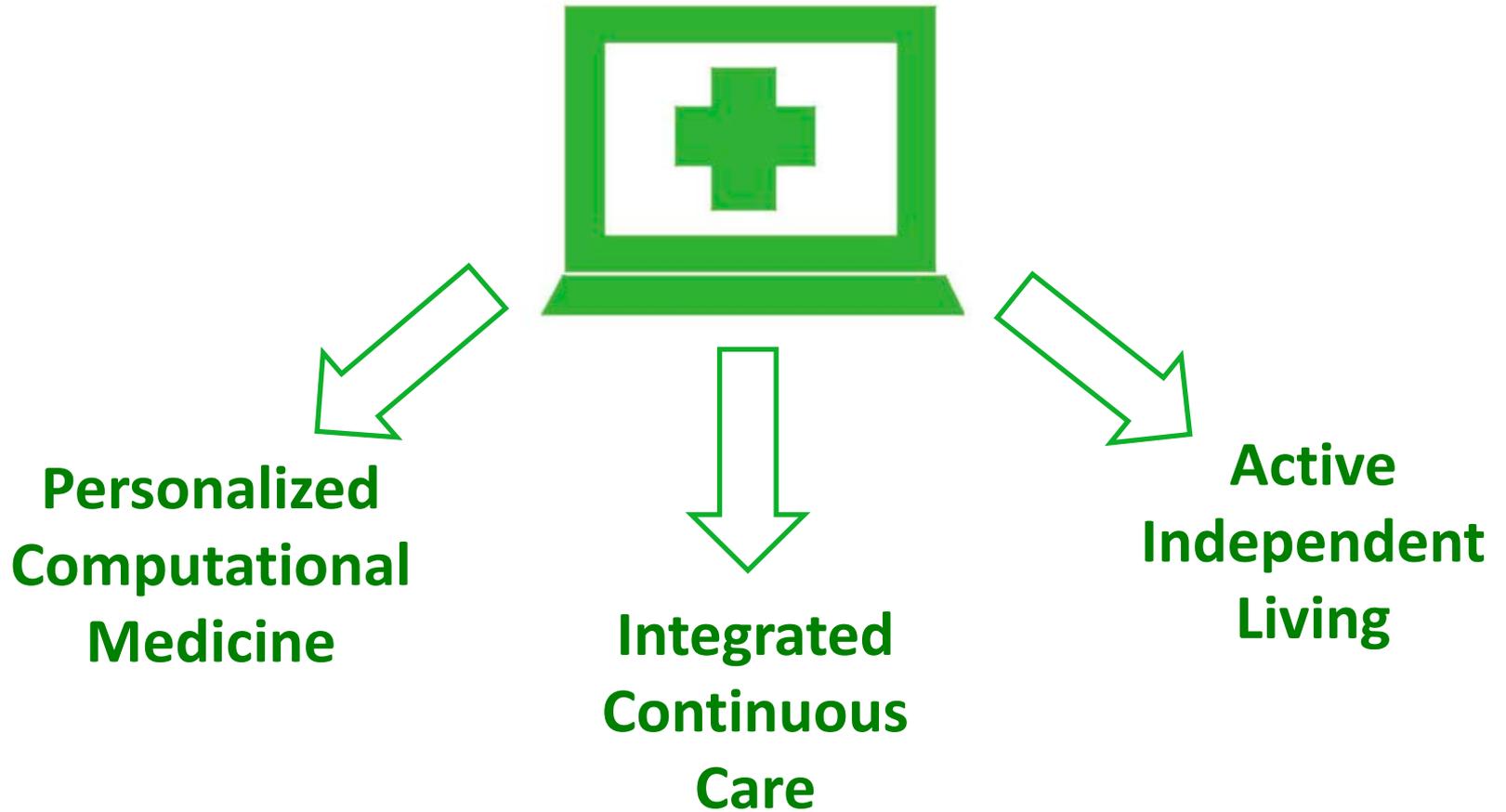


Outline

- Active Independent Living at BDigital
- Ageing society, facts
- Ambient Assisted Living
- Available products: teleassistance, telemedicine
- Our approach: SAAPHO project
- Conclusions: lessons learned

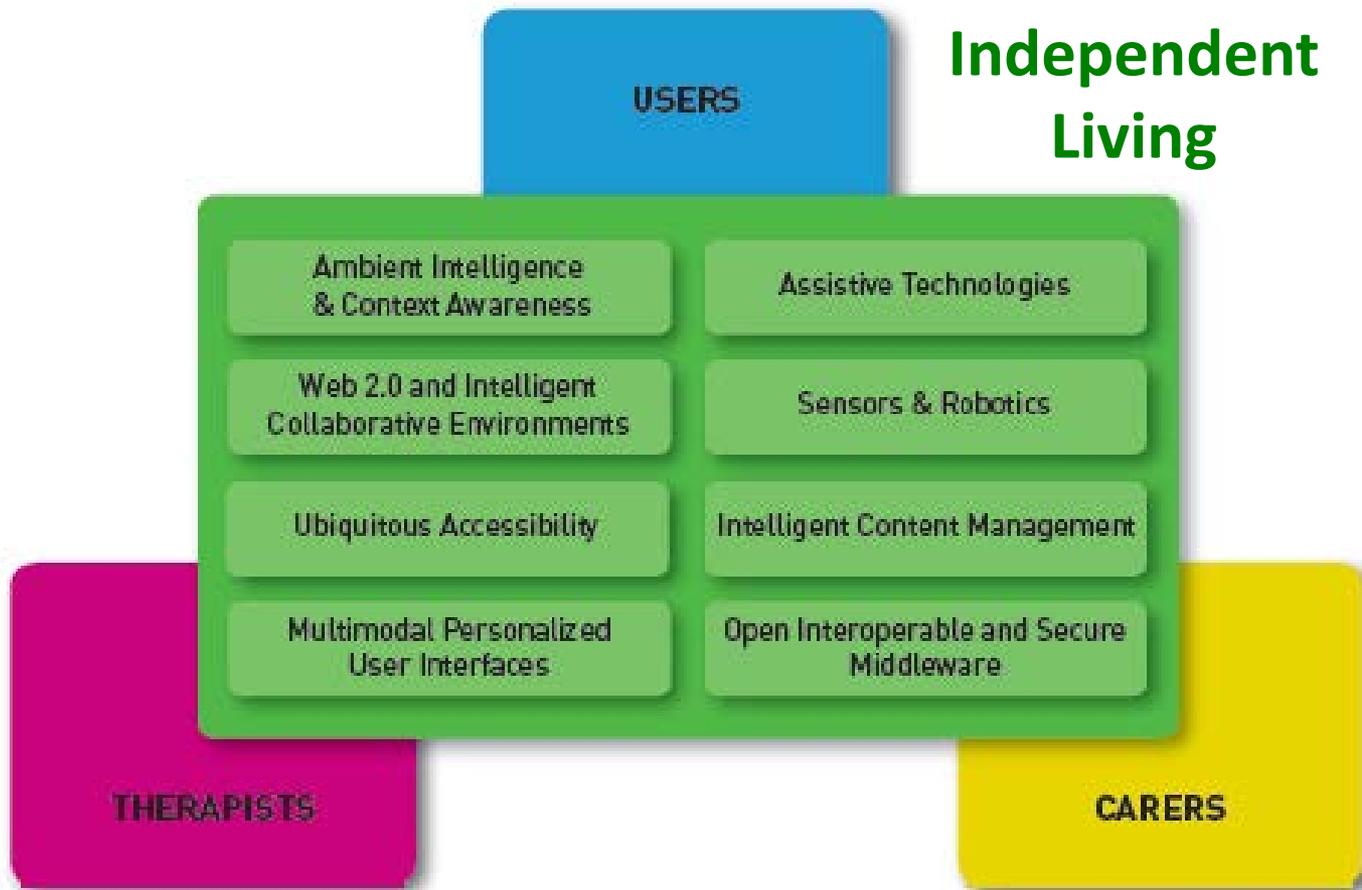


eHealth and eInclusion R&D



eHealth and eInclusion R&D

Active
Independent
Living



Active Independent Living - Projects



PARTICIPATION SERVICES

SECURITY SERVICES

HEALTHCARE SERVICES

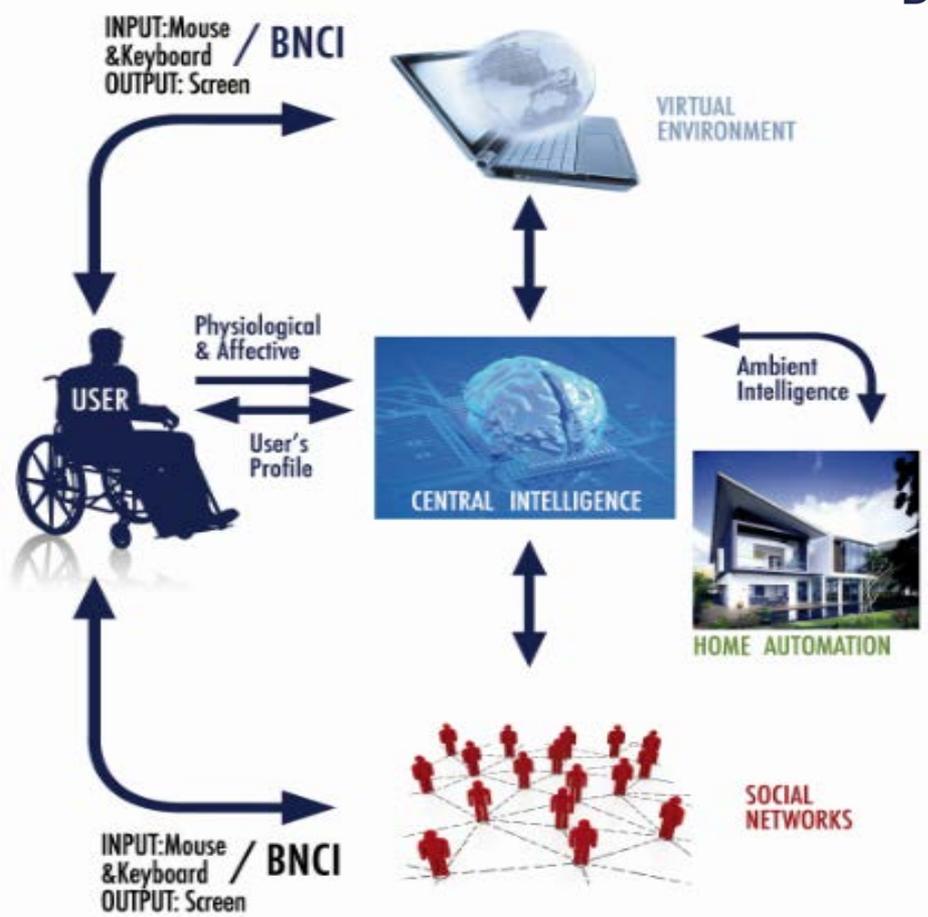
Secure Active Aging: Participation and Health for the Old People



- Instrument: AAL Call 3
- Duration: 2011-2014
- BDIGITAL role:
 - Project coordinator
 - Leader of Participation and Security Technologies WPs



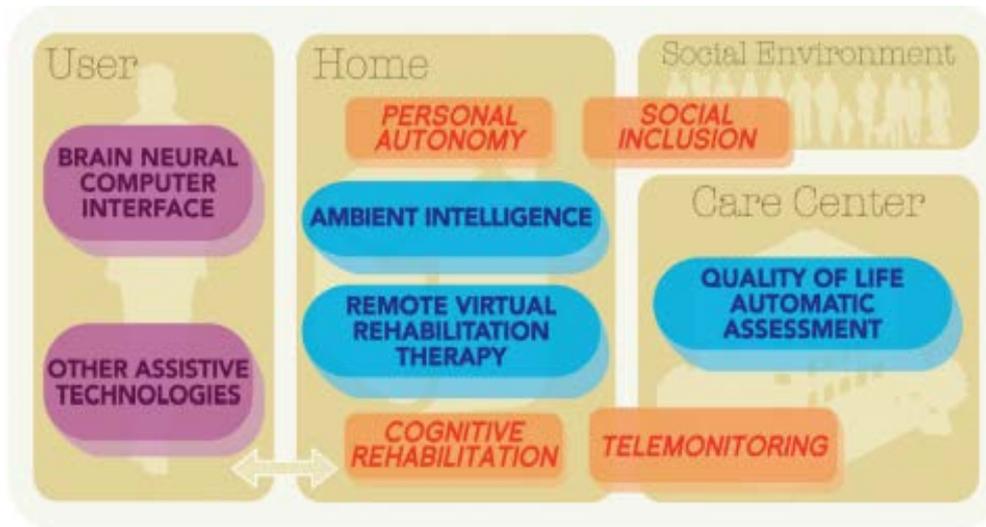
Active Independent Living - Projects



Autonomy and Social Inclusion through mixed reality brain-computer interfaces: connecting the disabled to their physical and social world

- Instrument: FP7 ICT Strep
- Duration: 2010-2012
- BDIGITAL role:
 - Project coordinator
 - Leader of Ambient Intelligence and Social Network WP

Active Independent Living - Projects



Brain-neural computer interfaces on track to home – Development of a practical generation of BNCI for independent home use

- Instrument: FP7 ICT Strep
- Duration: 2012-2015
- BDIGITAL role:
 - Project coordinator
 - Leader of telemonitoring and home support through ambient intelligence, cognitive rehabilitation, and automatic quality of life assessment

Active Independent Living - Projects



Cloud platforms Lead to Open and Universal access for people with Disabilities and for All

- Instrument: FP/ - Cooperation
- Duration: 2011-2015
- BDIGITAL role:
 - automatic modification of user profile based on changing contexts
 - auto-personalisation of mobiles depending on the user profile and the accessibility features of these devices
 - auto-personalisation social networking interfaces depending on user profile preferences

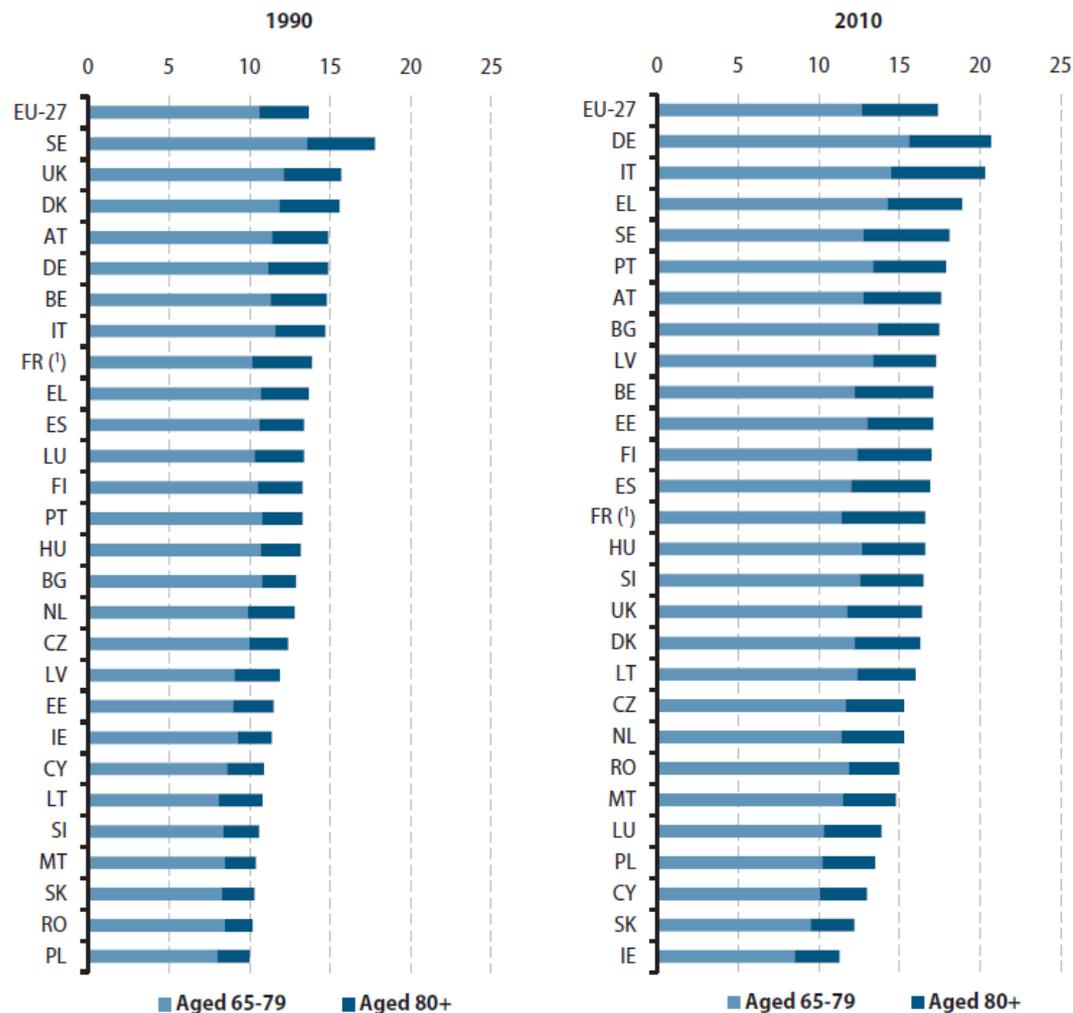




Ageing Society, facts

- Demographic change and ageing in Europe implies not only **challenges** but also **opportunities** for the citizens, the social and healthcare systems as well as industry and the European market.
- Europe, like many other developed parts of the world, is in the middle of a **demographic transition** which is fundamentally transforming the ways in which our societies are structured and function. Very large numbers of the post-1945 baby boom generation are changing their lives from full-time workers to full-time pensioners, sometimes adopting part-time or flexible work as a transition step.

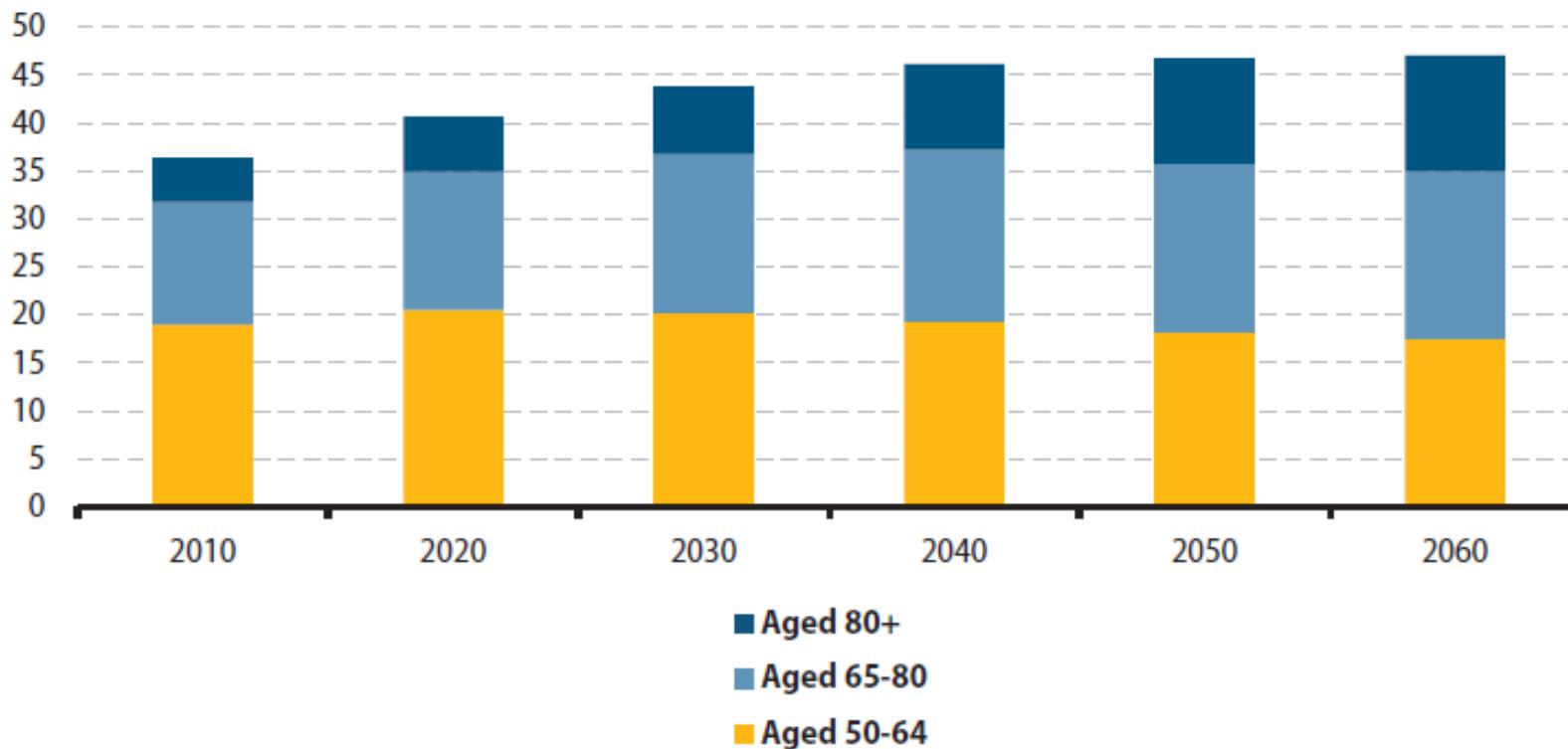
Figure 1.1: Relative importance of elderly persons in the total population on 1 January
(% share of total population)



(¹) 1990, excluding overseas departments.

Source: Eurostat (online data code: demo_pjanind)

Figure 1.10: Projected structure of the population by age group, EU-27, 1 January (1)
 (% share of total population)



(1) 2010, estimates.

Source: Eurostat (online data code: [proj_10c2150p](#))



Ambient Assisted Living



- Foster the emergence of innovative ICT-based products, services and systems for ageing well at home, in the community, and at work, thus increasing the quality of life, autonomy, participation in social life, skills and employability of elderly people, and reducing the costs of health and social care.
- EU has invested in the last 5 years more than 300M€ in public funds to foster a global investment of about 700M€



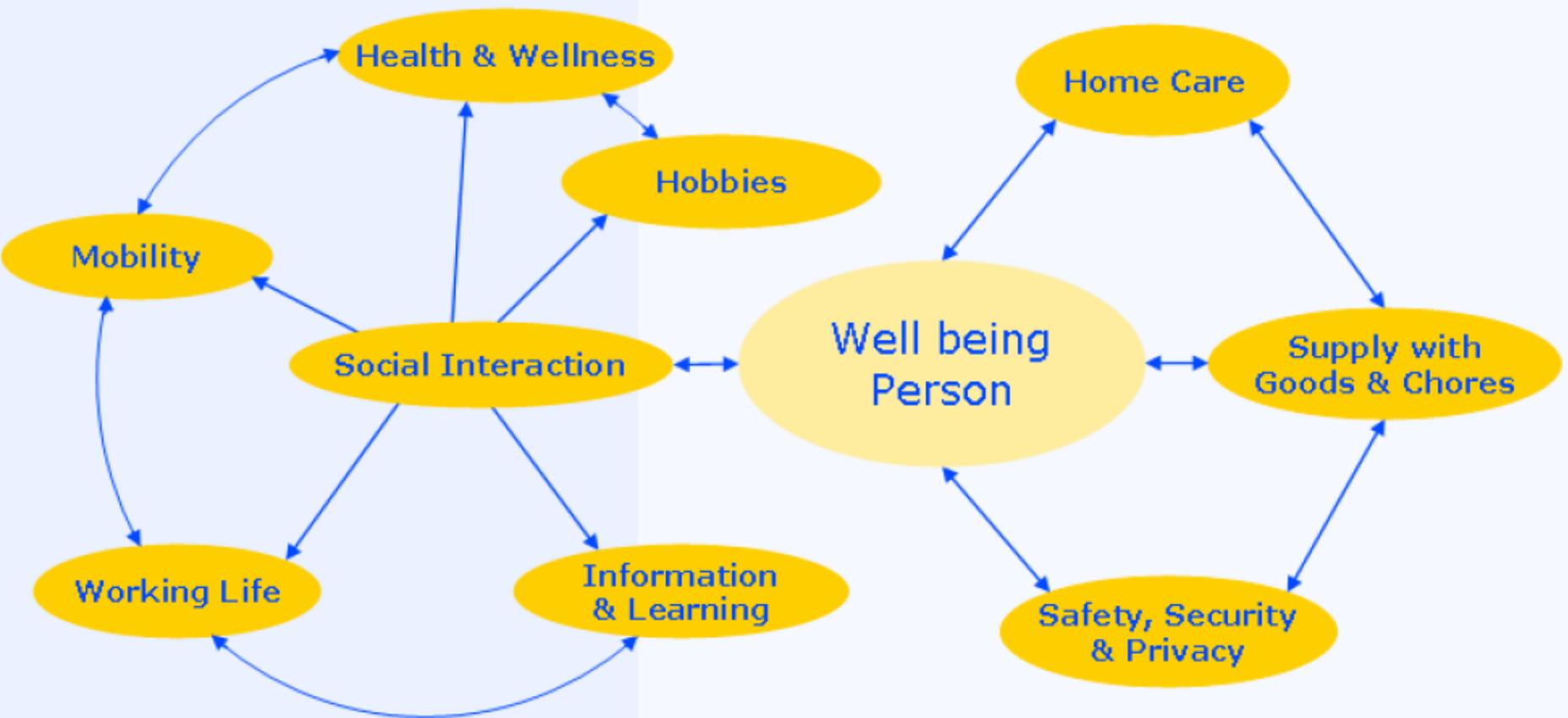
Ambient Assisted Living

Ambient Assisted Living



Surrounding

Person@Home



Ambient Assisted Living

Table 6.10: Internet use and activities carried out by individuals, by age group, EU-27
(% of individuals)

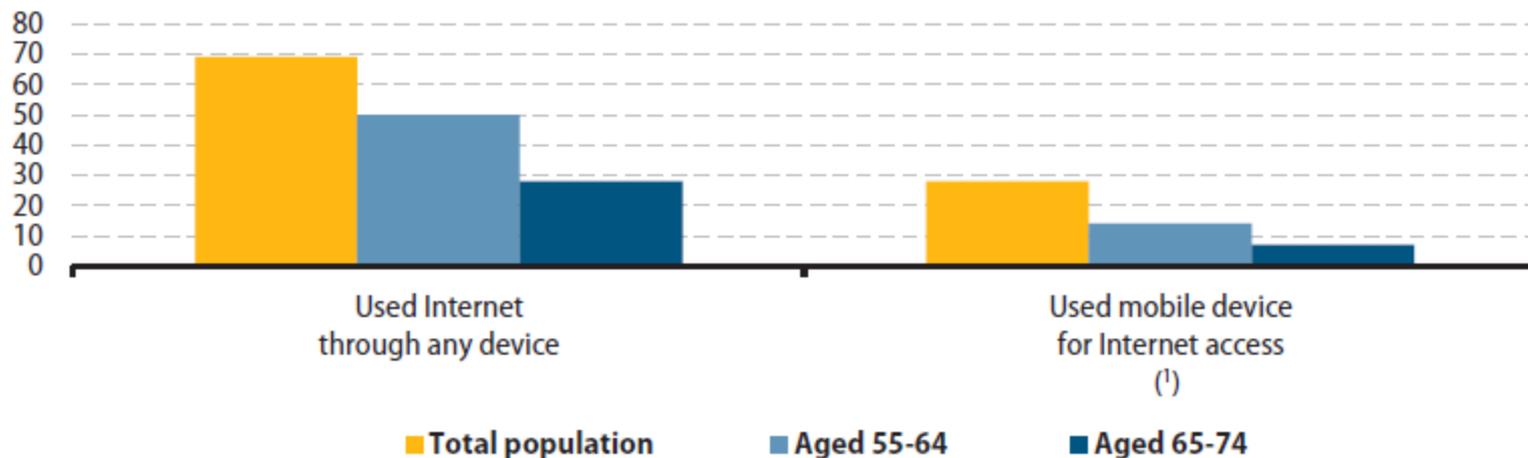
	Total population		Aged 55-64		Aged 65-74	
	2005	2010	2005	2010	2005	2010
Frequency of use: at least once a week	43	65	26	46	10	25
Frequency of use: daily	29	53	17	36	5	17
Used Internet in the last 3 months:						
for any training and education related purposes	:	39	:	22	:	10
for looking for information about education, training or course offers	:	23	:	10	:	3
to do an online course (of any subject)	:	4	:	2	:	1
reading/downloading online newspapers/news	17	34	10	24	3	14
to subscribe to news services or products to receive them regularly	:	6	:	4	:	2
seeking health information	16	34	11	26	5	15
sending/receiving e-mails	42	61	26	43	10	24
playing/downloading games, images, films or music	16	28	4	11	1	6
finding information about goods and services	39	56	24	40	9	22
job search or sending an application	10	15	2	4		
downloading software	13	21	7	11	3	6
telephoning or video calls	:	19	:	10	:	5
listening to web radios and/or watching web TV	10	26	3	13	1	6
uploading self-created content to any website to be shared	:	22	:	10	:	5
posting messages to social media sites or instant messaging	:	32	:	10	:	4

Source: Eurostat (online data code: [isoc_bde15cua](#))

Ambient Assisted Living

Figure 6.26: Individuals using mobile devices for Internet access during the three months prior to the survey, EU-27, 2010

(% share of given age group)



(¹) Mobile phones (or smart phones), handheld computers (palmtop, PDA), portable computers (laptop) away from home or work.

Source: Eurostat (online data codes: [isoc_bde15b_i](#) and [isoc_ci_ifp_iu](#))

Available products: teleassistance, telemedicine

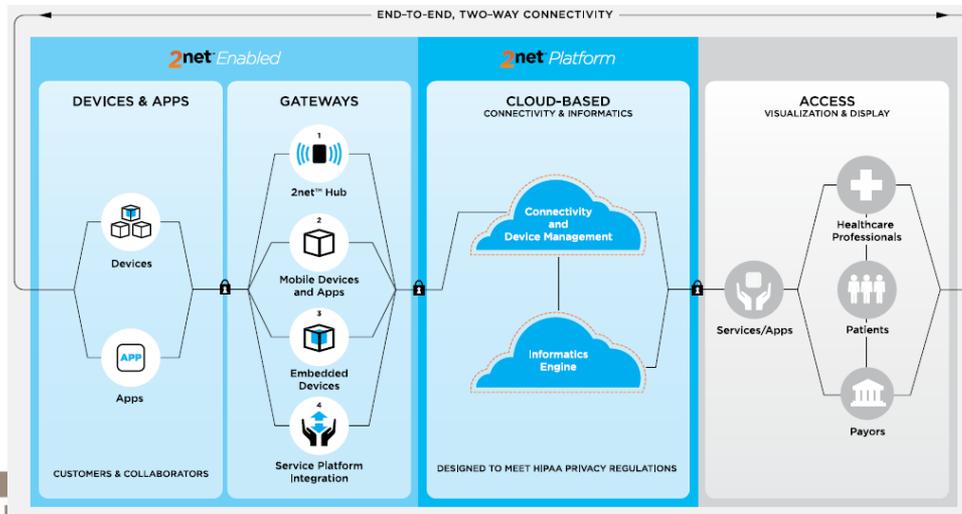
Care Innovations (Intel & GE)



Cruz Roja + Vodafone



Qualcomm



Grupo NEAT





SAAPHO

Secure Active Aging: Participation and Health for the Old



Secure Active Aging: Participation and Health for the Old

SAAPHO



SAAPHO: Approach to the Ageing problem

Modern European societies are committed to take care of their citizens, but the **ageing trend** will burden healthcare system and to guarantee the feasibility of this commitment innovative approaches are required.

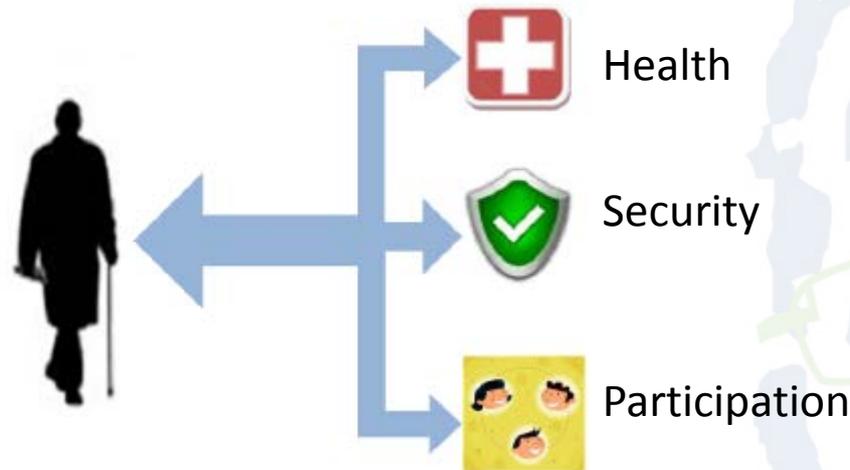
These changes in demographics will have a clear effect on the society in which we live and pose a **major challenge** to the sustainability of healthcare and pensioning systems.

Ageing puts a strain on the **well-being, independence and dignity** of people's life and the innovative approaches need to be meaningful and of value not only to the system but also to the individuals.



The Ageing problem: Active Ageing

According to the recommendations made by **WHO** in the policy framework **Active Ageing**, this term entails the optimization process of the **health, participation and security** opportunities in order to improve the life quality of people as they get older, including the disabled fragile people who need attendance (WHO, 2002).



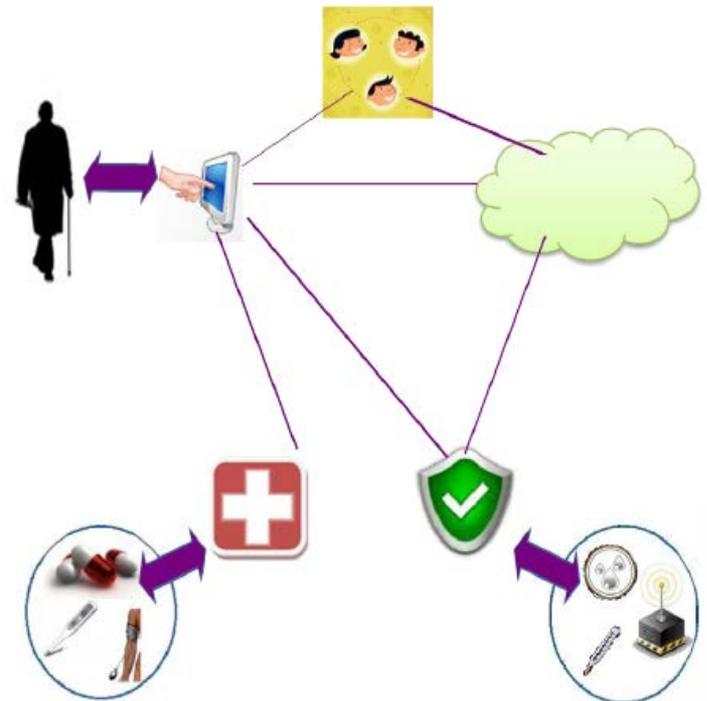
The attendance of seniors might be eased by the use of **novel ICTs initiatives** which are called to play a key role in the following years.



The SAAPHO project

The SAAPHO project (AAL-2010-3-35) supports Active Ageing by assisting seniors to participate in the **self-serve society** preserving and enhancing independence and dignity through the application of innovative ICT-based solutions.

- To boost **accessibility** to a diverse number of services by means of easy-to-use and easy-to-configure user interfaces.
- To offer **intelligent**, intuitive and user-friendly tools using tactile screens and mobile devices which represent a more intuitive form of human computer interaction for seniors.





The SAAPHO project

- **Social participation:** empower social inclusion by means of easy to use communication and participation services especially adapted to seniors
- **Security and safety:** ensure well-being of seniors using ambient sensors and monitoring ambient parameters in a smart and proactive way
- **Healthcare:** support seniors to follow their medical routines and monitor their health condition regularly by means of an expert system which also recommends good habits and best practices.

PARTICIPATION SERVICES



SECURITY SERVICES

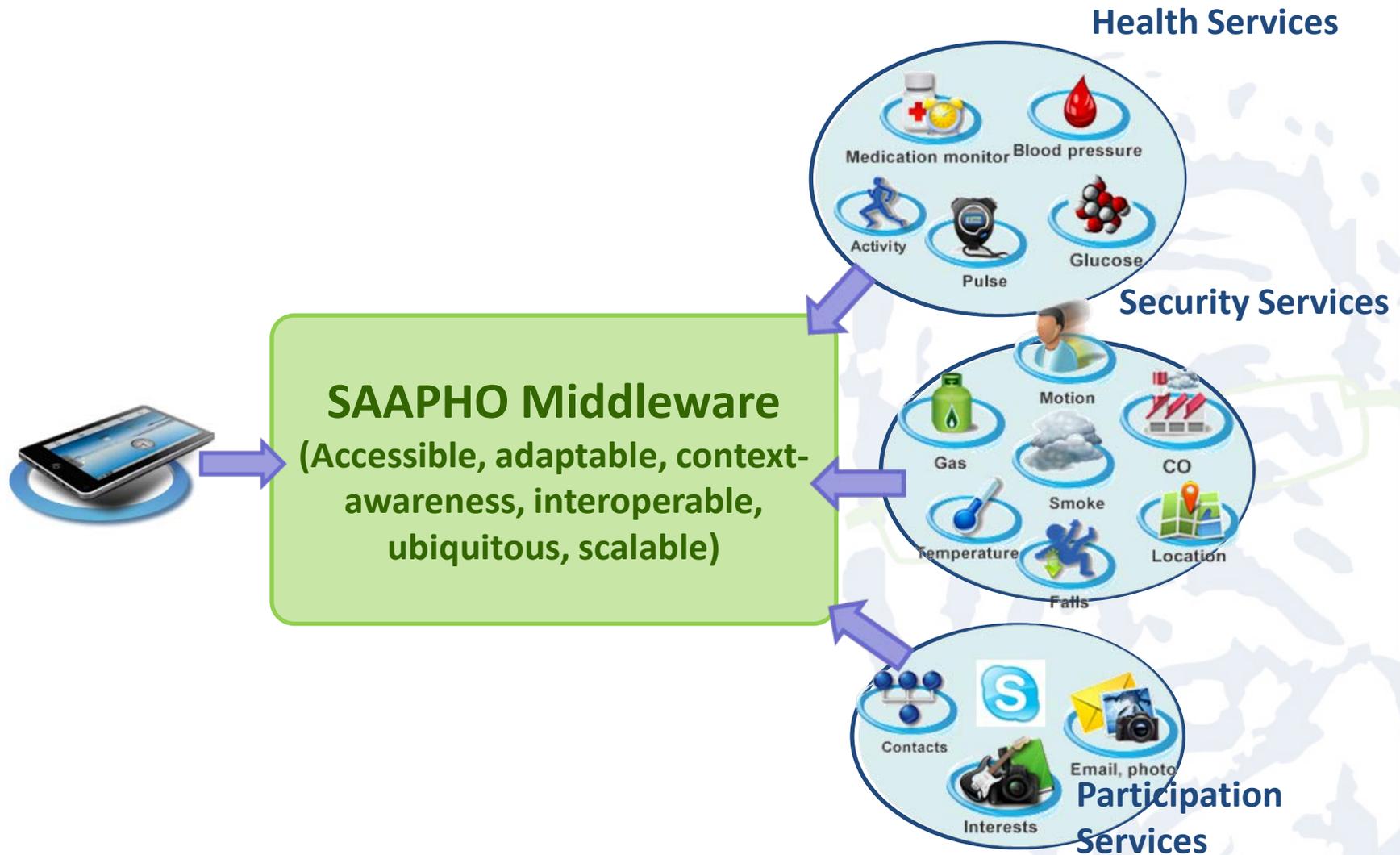


HEALTHCARE SERVICES



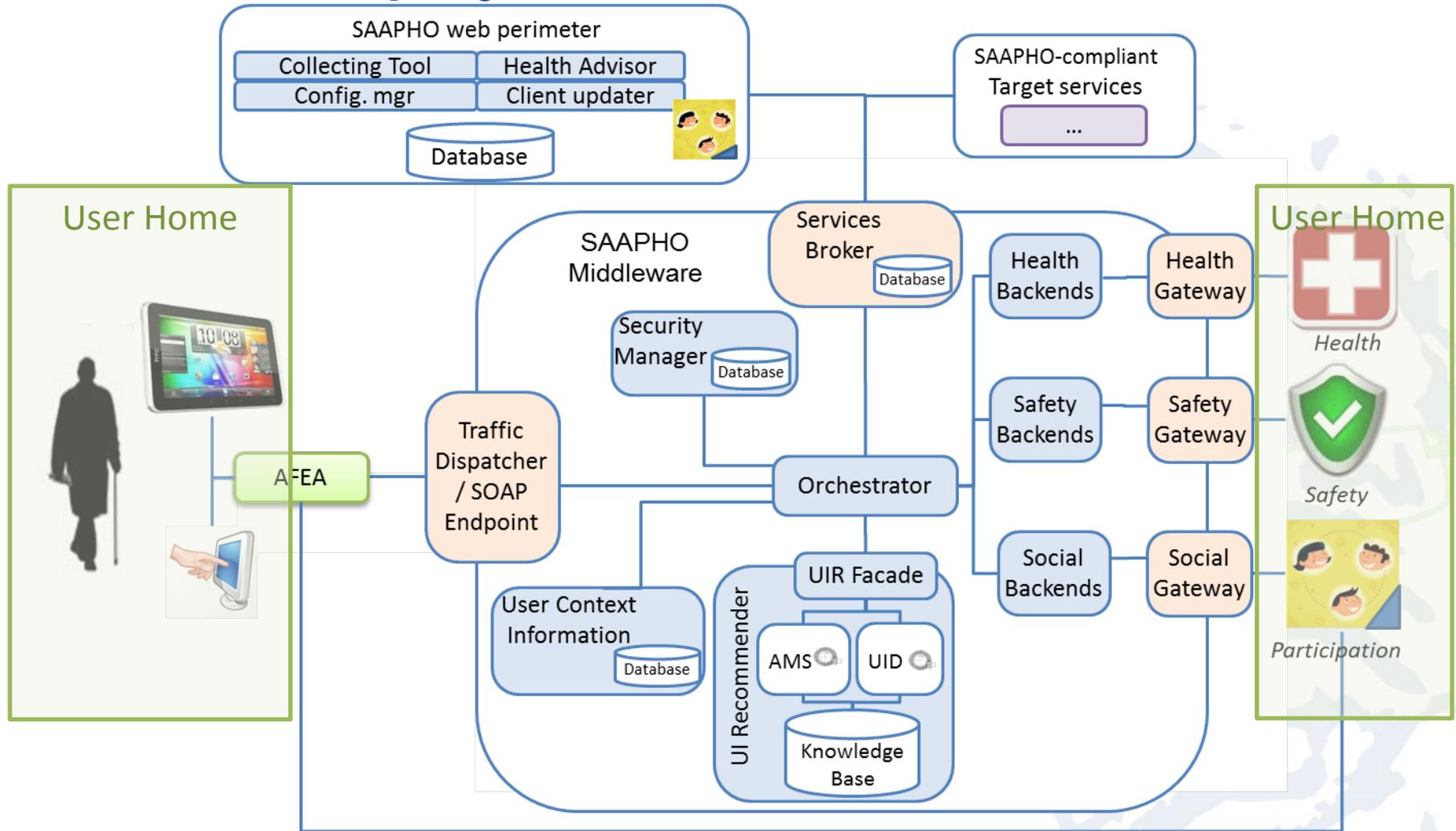


The SAAPHO project





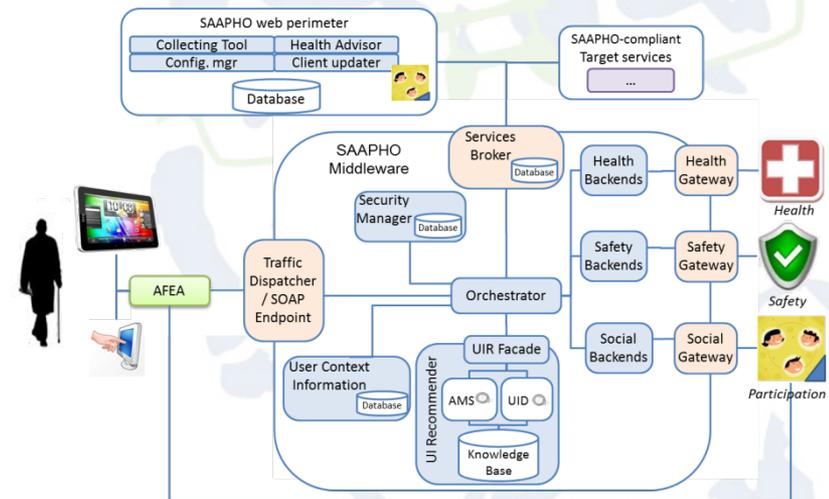
The SAAPHO project





The SAAPHO project

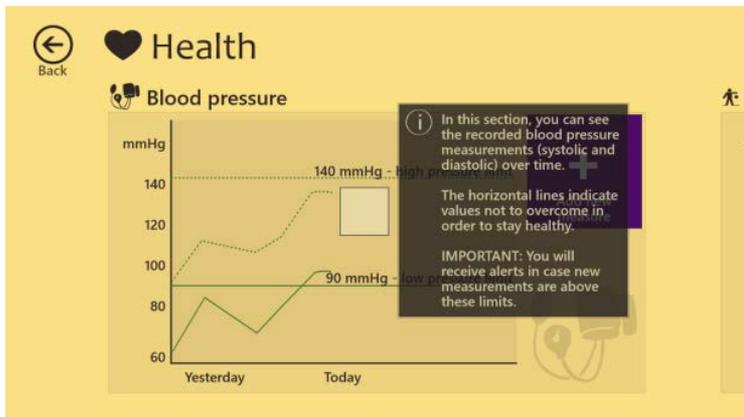
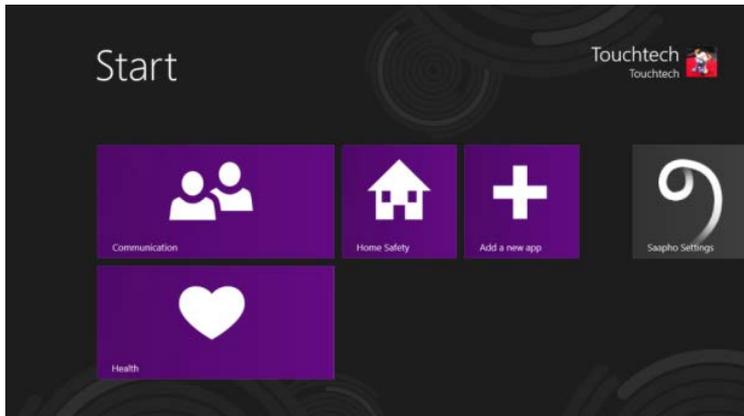
- **Main characteristics:**
 - Service Oriented Architecture (Web Services)
 - SOAP: control of the state, not restricted to HTTP, strong contracts
 - HTTPS
 - Concrete architecture of UNIVERSAAL Reference Architecture.
- **Strengths:**
 - Integration of different sensors and different services
 - Scalable
 - Open to include other components
 - Modular
 - Simple to integrate other services
 - Interoperable
 - Built-in accessibility





The SAAPHO project

- User Interface (Year 1 Prototype)
 - “Personas” method: target users represented in terms close to their needs





The SAAPHO project

Examples of services: Participation services

Users Preferences	Operations	Online APIs
Skype / MSN messenger 	<ul style="list-style-type: none"> List of available users Status of each user Chat (open, initiate, close connection) with other users Teleconference with other users. Voice calls (open, initiate, close connection) to other users 	
Facebook / Picasa 	<ul style="list-style-type: none"> View and comment photos from other users of the system. Upload, delete photos to the system and organize in albums. Control the level of privacy. Share albums to other users or make them publics. 	
Free SMTP (Gmail /Hotmail) 	<ul style="list-style-type: none"> Send mail Check and receive unread mails Retrieve contacts list Search mails by contact or by search term 	
Facebook 	<ul style="list-style-type: none"> Add, delete, and read comments Fetch, post, delete a text to the wall Retrieve user's friends and maintain friend lists Retrieve group details and members Retrieve, edit, delete user's interests and likes Retrieve, edit, delete user profile data and profile images 	
Radio, newspaper, games 	<ul style="list-style-type: none"> open, close connection Save as a "Favorites" updates by RSS feeds 	



SAAPHO : user-centred design

o Target profiles:

Healthy older adults

- *Functional level*: **independents** for the daily activities.
- *Health perspective*: **no chronic** diseases, no frailty, no risk factors for developing a new disease

Older adults with frailty or at risk

- *Functional level*: independents for the basic Daily Live Activities, may be **dependent** for some instrumental activities (cooking, shopping...).
- *Health perspective*: people at risk for developing a **chronic** disease due to health risk factors such as diabetes mellitus, hypertension...
- *Psycho-social perspective and environment*: persons with social conditions that are at risk of social **isolation**: living alone, widowhood, depression, low number of social contacts, environment with barriers.



SAAPHO : user-centred design

SAAPHO uses a **User-Centred Design Process**

- Questionnaires and Focus Groups have been run in Spain and Slovenia
- Topics related to users interaction, interface adaptations, health monitoring, home security and social participation have been widely discussed with users

Interviewed people considered SAAPHO a good opportunity to facilitate their daily life

Users felt confident towards a system adapted to their needs and preferences



SAAPHO: Sensors and Tools selected by the users

➤ Healthcare:

- ✓ Physical Activity Monitoring
- ✓ Glucose Monitoring
- ✓ Pressure Measurement
- ✓ Medication Compliance Monitoring

➤ Home Safety and Security:

- ✓ Temperature Monitoring
- ✓ Smoke Detector
- ✓ CO Detector
- ✓ GAS Detector
- ✓ Fall Detection in Indoor Environments
- ✓ Fall Detection and Localization in Outdoor Environments

➤ Participation Services:

- ✓ Video-Voice Communication : Skype, Msn Messenger
- ✓ Text Communication : e-mail , Facebook
- ✓ Photo Sharing: Facebook, Picasa
- ✓ Leisure: Radio, Newspapers

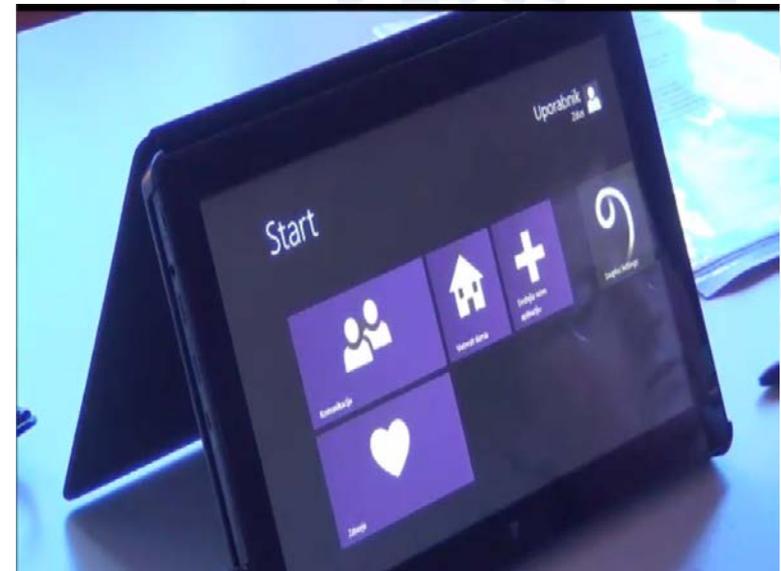




First Year Prototype Testing. Results

Demographics and ICT questions

- **10 older adults** (Spain, n=5; Slovenia, n=5) participated into testing sessions.
- **Age**, median (range): Spain: 69 (64-85); Slovenia: 63 (58-75).
- **Gender**: Spain: 60% women; Slovenia: 60% women.
- **Experience in ICT**:
 - **None**: 0% Spain; 8% Slovenia.
 - **Computer**: 100% Spain; 100% Slovenia.
 - **Smartphone**: 0% Spain; 0% Slovenia.
 - **Tablet PC**: 0% Spain; 0% Slovenia.





Y1P of the SAAPHO platform: Spain (n=5). Results

Figure 1. Feelings using the SAAPHO platform

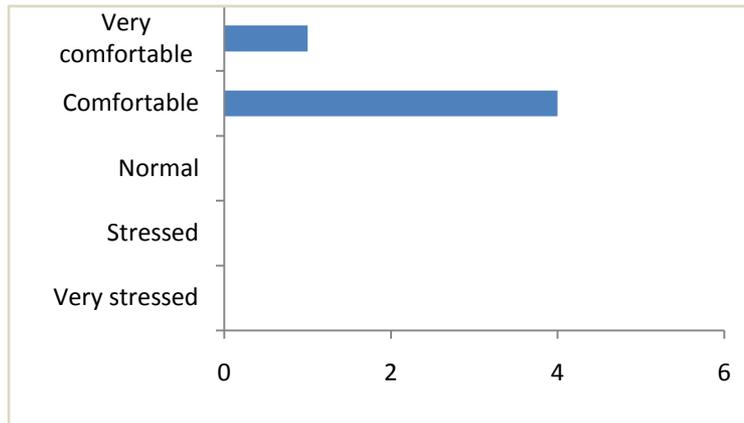
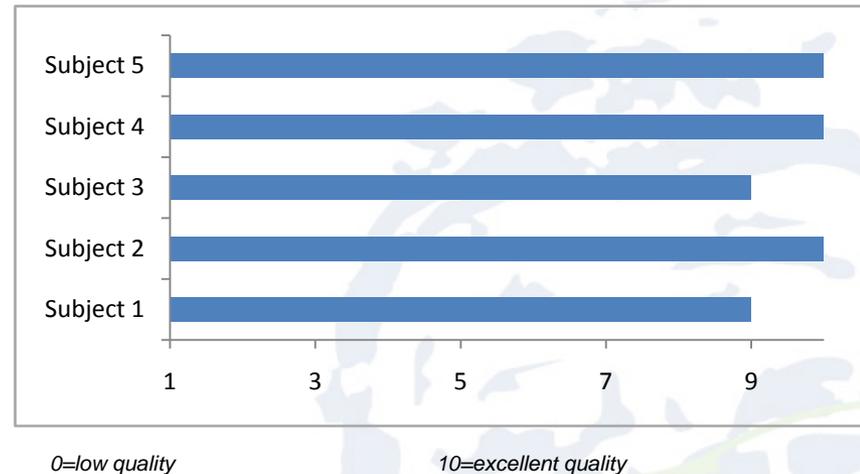


Figure 2. Grade of perceived quality using SAAPHO



Recommendations to others and preferences

All participants would recommend the **SAAPHO platform** to another older person since they considered it **very easy** and **useful** for older people.



Y1P of the SAAPHO platform: Slovenia (n=5). Results

Figure 1. Feelings using the SAAPHO platform

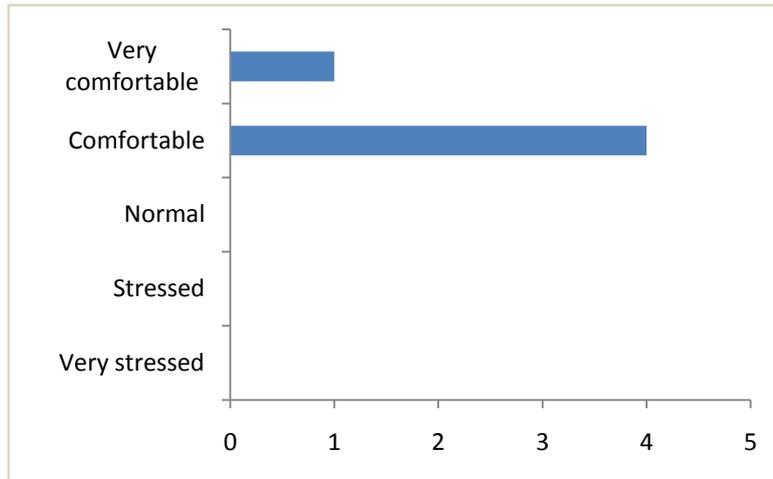
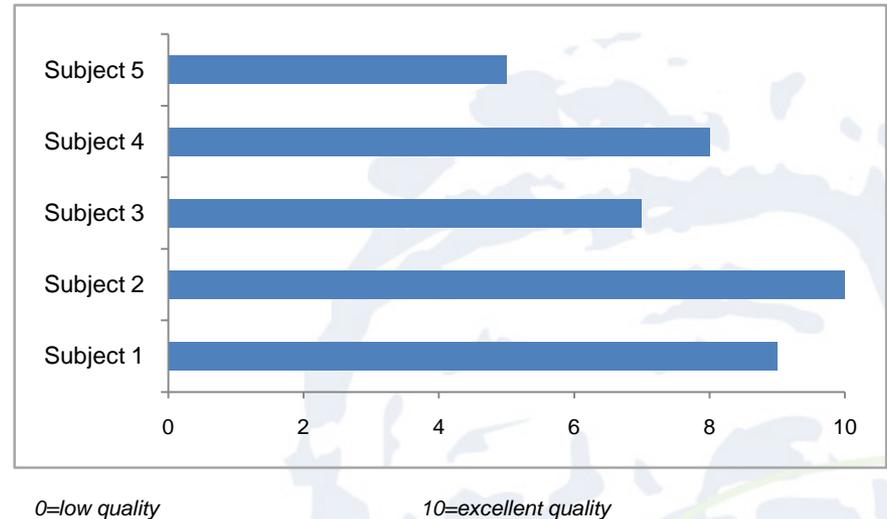


Figure 2. Grade of perceived quality using SAAPHO



Recommendations to others and preferences

All participants would recommend the **SAAPHO platform** to another older person since they considered it was **easy, useful** and **friendly** for **older people** familiar with technology or interested in using it.



SAAPHO : user-centred design

- SAAPHO project was very well accepted and seen as an interesting and useful opportunity for participation by older people.
- The SAAPHO platform was easy to use according to usability test parameters of effectiveness, efficiency and satisfaction.
- Feedback provided by users was essential to ensure users satisfaction with the product under development.
- The involvement of older people was very helpful for the technologists to make decisions about SAAPHO design.
- The participation of older people will continue in the next prototypes. Testing sessions will be conducted in the two testing sites.



Business Model

Ecosystem Actors

- Users and informal carers
- Patients associations, Professional Associations
- Home care services, day care centres, nursing homes, telehealth services, pharmas, Prevention, Fitness/Wellness
- Telecom players, SW companies, OEM manufacturers, wireless chips producers, smart phone producers, ICT Management and ICT consultancies, Medical products,
- National Health Services, Private health Insurances

Marketplace



Business Models in the market

Business models very variable across the market. Vendors are adapting their models in accordance with clients needs and local framework. Examples:

- One-off device purchase
- Leasing
- Renting
- Sponsors
- Subscriptions

Price model based on:

- Equipment and peripherals
- Services like installation, training, customization, etc
- Hosting of data
- Conditions monitored
- (...)



Conclusions: lessons learned

Active Ageing:

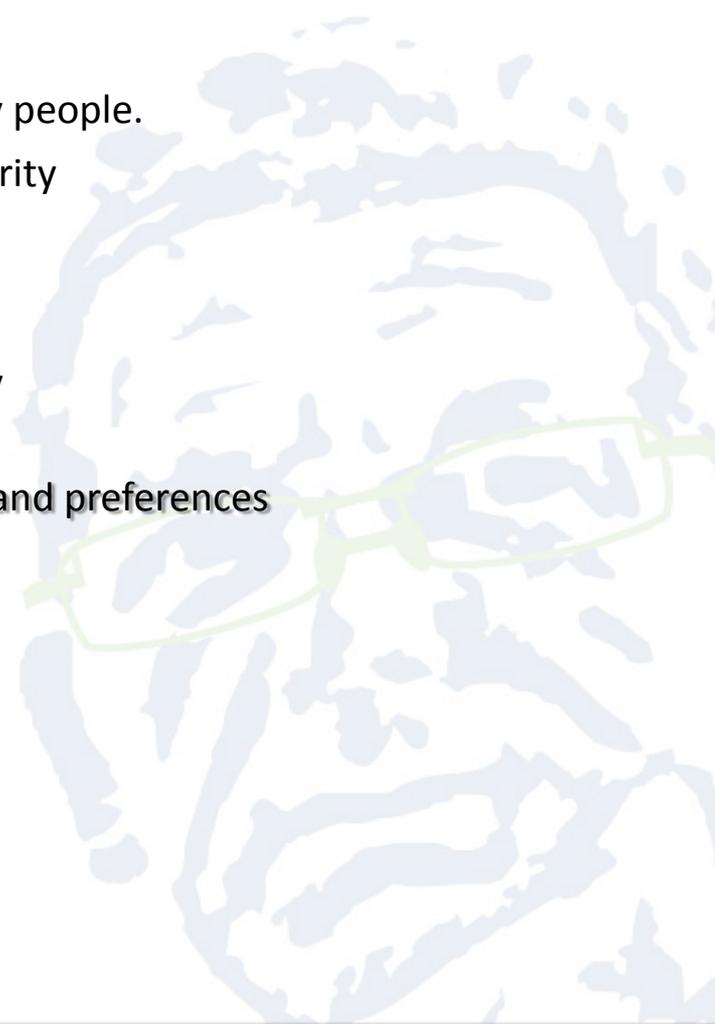
- stimulate and promote participation and e-Inclusion of elderly people.
- provide services related to health-care, participation and security

User centered design:

- User must take **active** participation in the design of technology
- It a good opportunity to make their daily life easier
- Users feel confident towards a system adapted to their needs and preferences

Personalization and adaption:

- **Adaptive** and **user-customisable** GUI
- Support to **personalized** actions and reminders to user





SAAPHO

Secure Active Aging: Participation and Health for the Old



Mercès!

Felip Miralles

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